UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

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| ASETEK DANMARK A/S,<br>Plaintiff,<br>v.<br>COOLIT SYSTEMS INC, et al.,<br>Defendants. | Case No. 19-cv-00410-EMC<br><br>**CLAIM CONSTRUCTION ORDER** |

Plaintiff Asetek Danmark A/S ("Asetek") accuses Defendant CoolIT Systems, Inc. ("CoolIT") of infringing five patents. The parties submitted two disputed claims terms for construction: one from the '330 patent and one from the '601 patent. Docket No. 237. On May 18, 2021, the parties appeared before the Court for a claim construction hearing on these two disputed claim terms.

## I. BACKGROUND

### A. Procedural Background

Asetek filed this lawsuit against CoolIT on January 23, 2019, alleging infringement of patents which pertain to liquid cooling technology, which transfers heat away from the heat-producing parts of electronic devices, *e.g.*, central processing units ("CPU's") and semiconductors. Compl. ¶¶ 8-9 (Docket No. 1). The technology operates by absorbing heat from a heat-generating device, transporting the heat away from that source and dissipating it elsewhere. *Id.* ¶ 24. Asetek accused CoolIT of infringing the '362 patent; the '764 patent; the '681 patent; the '354 patent; and the '355 patent. *Id.* ¶¶ 16-94.

On July 22, 2020, this Court issued a claim construction order construing several claim

terms at issue in the patents-in-suit, including the term "[inlet/outlet] header," as discussed further *infra*. *See* Claim Construction Order at 25-29 (Docket No. 149).

On December 22, 2020, this Court issued a minute order consolidating the case at bar with the related case of *Asetek Danmark A/S v. Corsair Gaming, Inc. et al*, Case No. 3:20-cv-06541-EMC. Docket No. 207 at 1. Asetek asserted two of the same patents in the *Corsair* action (the '354 and '355 patents) along with the '601 and '196 patents, which it alleged were continuations of the '354 and the '355 patents. *Corsair* Compl. ¶¶ 1, 13. As in the instant case, each of these patents relates to liquid cooling technology for cooling heat-generating electronic components. *Id.* ¶ 1. Corsair identifies itself as "a provider of high-performance gaming and streaming products" and Asetek alleged that Corsair's Capellix products infringed upon these four patents. *Id.* ¶ 11. Asetek alleged that CoolIT supplied Corsair with liquid cooling products to be used in Corsair's gaming products, and that both parties had knowledge that such products infringed the four patents-in-suit. *Id.* ¶ 13.

After consolidating the instant case with *Corsair*, the Court directed the parties to meet and confer regarding case management for pre-trial and trial, including the filing of a consolidated complaint. *Id.* at 2. The Court also directed the parties to meet and confer and stipulate to the pre-trial limitations they previously agreed to during their meet and confers, *e.g.*, expedited contentions for the '601 and '196 patents, with no new infringement theories by Asetek and no new prior art by CoolIT; no claim construction for the '601 and '196 patents; no new infringement or invalidity contentions or claim construction for the '354 or '355 patents; and limits on the number of claims and claims per patent to be tried. *Id.*

In the operative SAC (the consolidated complaint), Asetek accuses CoolIT and Corsair of infringing five separate patents: (1) U.S. Patent No. U.S. 10,613,601 ("**the '601 patent**"); (2) U.S. Patent No. 10,599,196 ("**the '196 patent**"); (3) U.S. Patent No. 10,078,354 ("**the '354 patent**"); (4) U.S. Patent No. 10,078,355 ("**the '355 patent**"); (5) U.S. Patent No. 8,240,362 ("**the '362 patent**"). Docket No. 228. The **'196 and '601 patents** are newly asserted in this consolidated case. CoolIT filed its Answer to SAC for Patent Infringement and Third Amended Counterclaims in which it accused Asetek of infringing, *inter alia*, the '330 patent, entitled "Fluid Heat

Exchanger Configured to Provide a Split Flow." Docket No. 233 ¶ 11.

The parties dispute the necessity of claim construction for the two claim terms at issue from the '330 and '601 patents. Asetek argues that claim construction is necessary because CoolIT has asserted new prior art and infringement theories following this Court's claim construction order. Docket No. 237 at 1. CoolIT argues that claim construction is not needed because the Court has already issued a claim construction order on the '330 and '601 patents. *Id.* To facilitate advancement of this case, the Court will construe the two claim terms at issue.

## II. LEGAL STANDARD

### A. Claim Construction

Claim construction is a question of law, although it may contain factual underpinnings. *Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1357 (Fed. Cir. 2016). "The purpose of claim construction is to 'determin[e] the meaning and scope of the patent claims asserted to be infringed.'" *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996)).

It is a bedrock principle of patent law that "the claims of a patent define the invention." *Innova/Pure Water, Inc. v. Safari Water Filtration Sys.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004). The words of a claim are generally given their "ordinary and custom meaning," which is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005); *see also Multiform Desiccants, Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998) ("[i]t is the person of ordinary skill in the field of the invention through whose eyes the claims are construed"). The inquiry into how a person of ordinary skill in the art interprets the claim term "provides an objective baseline from which to begin claim interpretation." *Phillips*, 415 F.3d at 1313. A person of ordinary skill reads the claim term "not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.*

In some cases, the ordinary meaning of claim language, as understood by a person of skill

in the art, may be "readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words." *Id.* at 1314. But other times the parties may use claim language idiosyncratically, and the Court must look to "those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean," such as "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.* (quoting *Innova*, 381 F.3d at 1116).

Courts first look to **intrinsic evidence** because "the claims themselves provide substantial guidance as to the meaning of particular claim terms." *Id.* The context in which a claim term is used can be highly instructive, as can "[o]ther claims of the patent in question, both asserted and unasserted." *Id.* "Differences among claims can also be a useful guide in understanding the meaning of particular claim terms." *Id.* But claims must also be read "in view of the specification," which is always "highly relevant to the claim construction analysis" and is often "dispositive." *Id.* at 1315 (internal quotations omitted); *see also Cont'l Circuits LLC v. Intel Corp.*, 915 F.3d 788, 796 (Fed. Cir. 2019) ("the specification 'is always highly relevant to the claim construction analysis … [and] it is the single best guide to the meaning of a disputed term'") (quoting *Phillips*, 415 F.3d at 1315).

In addition to consulting the specification, courts should consider "the patent's prosecution history," which is "of primary significance in understanding the claims." *Markman*, 52 F.3d at 980. However, the Federal Circuit has cautioned that "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Phillips*, 415 F.3d at 1317.

District courts may also consider **extrinsic evidence**, which consists of "all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises." *Id.* at 1317-18. However, extrinsic evidence is "less significant than the intrinsic record in determining the legally operative meaning of claim

language." *Id.* at 1317 (internal quotation omitted).

## III. DISCUSSION

A. Stipulated Claim Terms

The parties have met and conferred and have reached agreement on claim construction for the following claim terms:

| Claim Terms | Patent No./Claim No. | Stipulated Construction |
|---|---|---|
| "reservoir" | '196 patent, claims 1 and 10<br><br>'601 patent, claims 1, 6, 12 | "single receptacle defining a fluid flow path" per the parties' stipulated construction in the prior Joint Claim Construction and Prehearing Statement (Dkt. 67). |
| "[upper/lower /pump/thermal exchange] chamber(s)" | '196 patent, claims 1, 2, 10<br><br>'601 patent, claims 1, 6, 12 | The term "chamber" should be construed as: "compartment within the reservoir" [with "reservoir" construed as indicated above], per the parties' stipulated construction in the prior Joint Claim Construction and Prehearing Statement (Dkt. 67). |
| "double-sided chassis" | '196 patent, claims 1, 10, 13 | "two-sided frame" per the Court's July 22, 2020 Claim Construction Order (Dkt. 149) |
| "stator" | '196 patent, claims 1, 10, 13 | "stationary parts of the motor that perform or support an electrical or magnetic function of the motor," per the Court's July 22, 2020 Claim Construction Order (Dkt. 149) |
| "either a first end or a second end of the thermal exchange chamber" | '196 patent, claim 2 | "either the first end or the second end of the thermal exchange chamber," per the parties' agreement reflected in email correspondence between counsel dated March 18, 2021<br><br>[correcting antecedent basis] |

Joint Supplemental Claim Construction and Pre-Hearing Statement at 2 (Docket No. 237).

B. Disputed Claim Terms

The parties seek the Court's construction on two disputed claim terms, one each from the

'601 and '330 patent.

1. "first/second side of the [plurality of] fins" ('330 patent, claim 1); "first/second side of the plurality of juxtaposed fins" ('330 patent, claims 12 and 14)

| Asetek's Construction | Cool's IT's Construction | Court's Construction |
|---|---|---|
| "the outer sides of the outermost fins in the entire array of fins" | Plain & ordinary meaning | Plain & ordinary meaning |

Claim 1 of the '330 patent contains the following claim language:

> "A fluid heat exchanger comprising … a seal extending between the housing and the plate positioned over the plurality of distal fin ends, wherein the elongate fluid inlet opening defined by the plate extends between a proximal end and a distal end, *wherein a region of the inlet header is positioned adjacent a first side of the fins and a region of the outlet header is positioned adjacent the second side of the fins*."

'330 Patent, Claim 1 (7:40; 8:12-18) (emphasis added to disputed claim language) (Docket No. 113-4). Claim 12 contains the following claim language:

> "a housing spaced apart from the plate, wherein the housing has an inlet aperture and an outlet aperture, *wherein the inlet aperture opens to an inlet header region positioned adjacent a first side of the plurality of juxtaposed fins and the outlet aperture opens from an outlet header region positioned adjacent a second side of the plurality of juxtaposed fins* opposite the first side of the plurality of fins, and wherein the elongate aperture of the plate extends away from the inlet header region transversely relative to the plurality of juxtaposed fins."

'330 Patent, Claim 12 (9:28-37) (emphasis added to disputed claim language). Finally, Claim 14 contains the following claim language:

> "a housing having an inlet and an outlet, *wherein the inlet opens to an inlet header region juxtaposed with a first side of the plurality of juxtaposed fins, and wherein the outlet opens from an outlet header region juxtaposed with a second side of the plurality of juxtaposed fins,* wherein the first side and the second side are positioned opposite relative to each other."

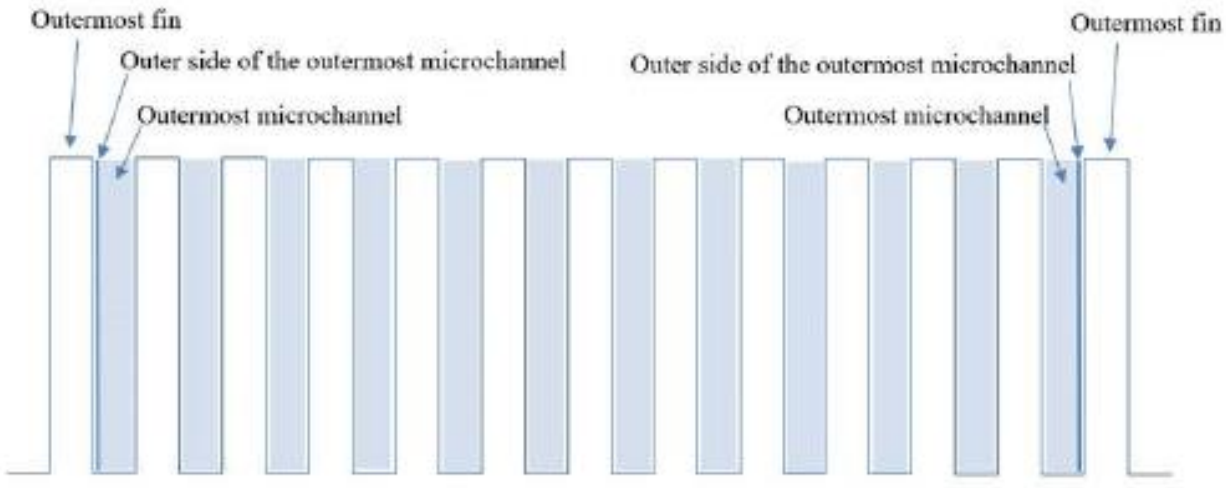
'330 Patent, Claim 14 (9:56-62) (emphasis added to disputed claim language).

The parties dispute whether the "plurality of fins," as used in the claim language cited

*supra*, includes all, or substantially all, of the fins and corresponding microchannels on the heat spreader plate. CoolIT proposes the plain and ordinary meaning of the word "plurality," which simply means "more than one." Opening Brief at 1 (Docket No. 244). Asetek argues that *substantially all* microchannels/fins in the array must constitute the claimed "plurality of fins." Responsive Brief at 5 (Docket No. 247). It contends that the claimed "plurality of fins" are those that are relevant for the purpose of the invention and can receive cooling fluid to cool the heat spreader plate. *Id.* Asetek argues that, absent its asserted limitation, the plain and ordinary meaning of "plurality of fins" could mean *any arbitrary subset of fins*, regardless of whether the fins in the plurality receive cooling liquid or not. *Id.* at 8.

The term "plurality of fins" has a plain and ordinary meaning to a person of ordinary skill in the art ("POSITA"). Both sides' experts agree that a POSITA would understand the term "plurality of fins" or "plurality of juxtaposed fins" to mean "more than one fin"/"more than one juxtaposed fin." *See* Pokharna Decl. ¶ 14 ("one of ordinary skill in the art would understand 'a plurality of fins' / 'a plurality of juxtaposed fins' to mean 'more than one fin' / 'more than one juxtaposed fin.'), ¶ 16 ("one of ordinary skill in the art would understand that the terms 'a plurality of fins' and 'a plurality of juxtaposed fins' to be the fins that define the microchannels that are designed to receive cooling fluid to cool the heat spreader plate, which is in contact with the computer chip and which in turn cools the computer chip"); Opening Brief at 4 (quoting Asetek's expert, Dr. Tilton, as testifying that a plurality of fins means "more than one" and "does not require all of the fins on the heat spreader plate"). Asetek has not shown that CoolIT intended to use a specialized lexicon for this claim term. Further, Asetek's argument that the plain meaning includes any arbitrary subset of fins is answered by the claim language, which contains a limitation stating that only those fins that "define[] a corresponding plurality of microchannels *configured to direct a heat transfer fluid over the heat spreader plate*" can be included within the plurality of fins. '330 patent, Claim 1 (7:46-48) (emphasis added). Thus, the functional limitation which Asetek's construction seeks to add is already present in the claim language.

The parties also dispute whether, as CoolIT argues, the term "side" can mean *both* the outside and the inside of the fins. CoolIT provides a graphic showing the "inner" and "outer" fins:




Reply Brief at 8 (Docket No. 250).

Asetek argues that the inlet and outlet headers in the invention are adjacent to and juxtaposed with only the *outermost fins* in the array. Responsive Brief at 8-9. CoolIT counters that, consistent with this Court's prior claim construction order, the requirement in the claim language that "a region of the inlet header is positioned adjacent a first side of the [plurality of] fins" and "a region of the outlet header is positioned adjacent the second side of the [plurality of] fins" does not impose Asetek's constraint that the "side[s]" of the plurality of fins be the outer sides of the fins. Reply Brief at 5-6.

CoolIT's proposed construction is consistent with this Court's prior claim construction order. CoolIT's expert, Dr. Pokharna, has submitted the following depiction of the claim language at issue:

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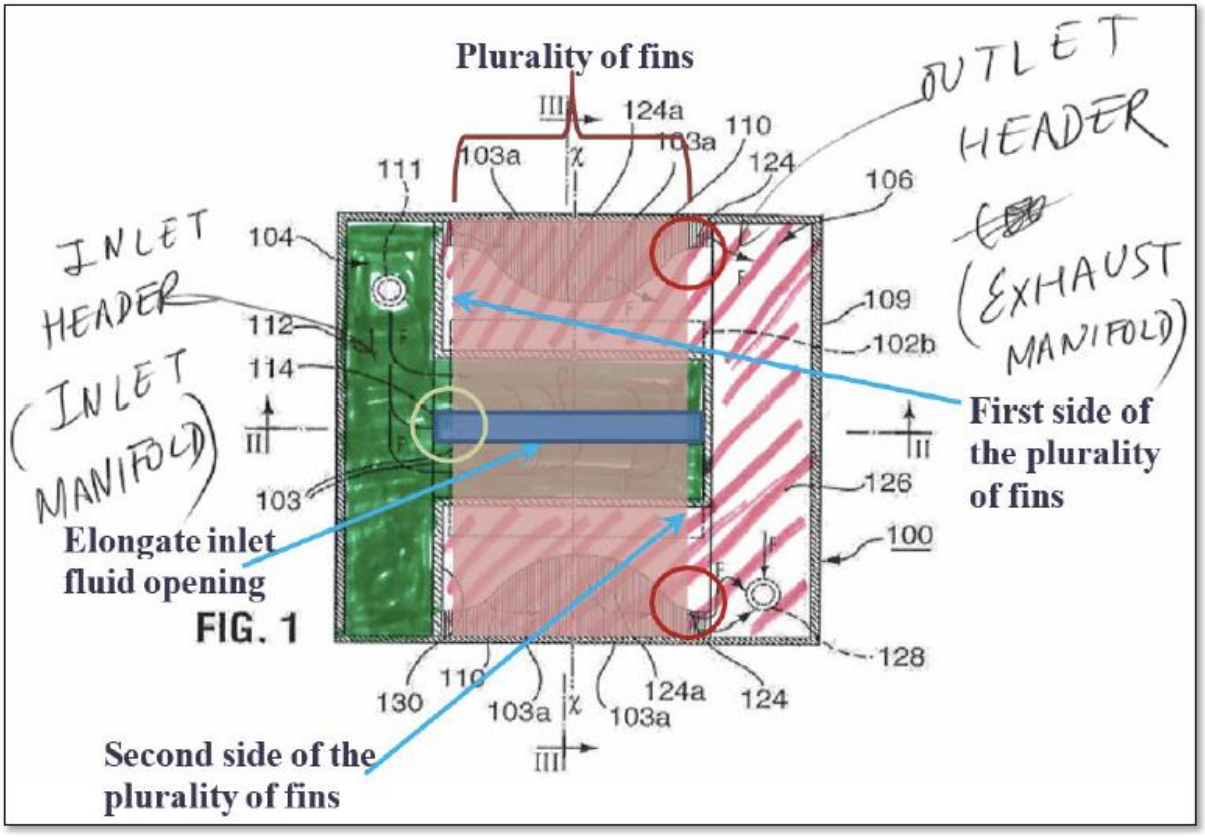
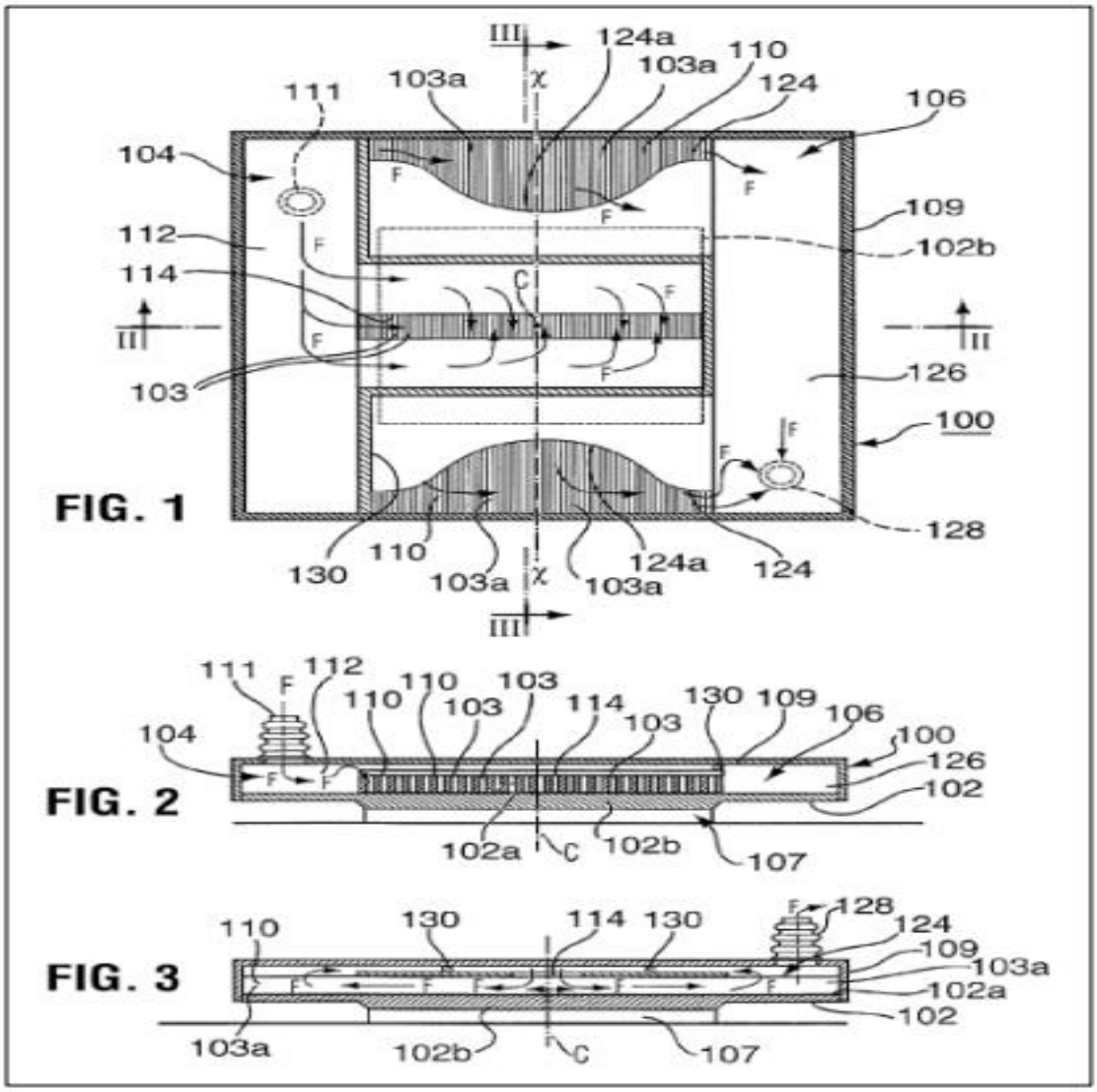



Pokharna Decl. ¶ 28.

At the claim construction hearing, CoolIT argued that the **first side** of the plurality of juxtaposed fins corresponds with the **inlet header 112** (the green highlighted region shaped like a sideways "T" in the above figure), and the **second side** of the plurality of juxtaposed fins corresponds with the **outlet header 126**. It argued that the inlet header includes the inlet passage 104 and inlet opening 114, but that the inlet header is not limited to that passage or that opening, for the inlet header 112 comprises the *entire shaded green region*. CoolIT's interpretation is consistent with this Court's prior claim construction order, wherein the Court agreed with CoolIT that the inlet header includes the portion of 112 above inlet opening 114 and that the outlet header includes the portion of 126 above outlet opening 124. *See* Claim Construction Order at 28.

Specifically, the Court noted Dr. Pokharna's opinion that "opening 114 is 'a plane that is *defining the bottom of the inlet header*,'" and it found this opinion persuasive because it comports with FIGS. 2 and 3 in the specifications, which show **the opening 114 below the inlet header 112**

**and the opening 124 below the outlet header 126**:




*Id.* (emphasis added). Thus, this Court already adopted CoolIT's plain and ordinary construction of "[inlet/outlet] header," when it held that the inlet and outlet headers include those sections of the sideways "T" which overlie the elongate fluid opening. *Id.* Further, this Court adopted the construction "with no intervening solid structure between it and" for both the term "adjacent" and the term "juxtaposed with." *Id.* at 29-33.

The Court's claim construction order shows that a side of the plurality of fins can refer to **both the outside or inside** of a first/second side of the plurality of fins. CoolIT's proposed construction is therefore consistent with this Court's prior claim construction order. Asetek's

proposed construction, which requires that the inlet and outlet headers be adjacent to and juxtaposed with **only the *outer* sides** of the outermost microchannels that receive cooling liquid to cool the heat spreader plate, contravenes this Court's prior claim construction order.

Further, both sides' experts, Dr. Pokharna and Dr. Tilton, agree that the plain and ordinary meaning of "plurality of fins" means "more than one fin." CoolIT's Opening Brief at 4 (Docket No. 244). Asetek seeks to insert a functional limitation into this claim term, arguing that plurality should mean "substantially all" of the fins. Asetek's Responsive Brief at 5 (Docket No. 247). Dr. Pokharna, CoolIT's expert, argues that a POSITA involved in manufacturing fluid heat exchangers would have been motivated to create a *few extra microchannels* on the heat spreader plate by producing a *few more fins* such that the "elongate fluid inlet opening" size does not need to precisely match all of the microchannels on the heat spreader plate. CoolIT's Opening Brief at 7. Asetek agrees with CoolIT's expert that the heat spreader plate may include a few extra fins/microchannels over which the "inlet"/"aperture" may not extend to, in order account for manufacturing tolerances. Asetek's Responsive Brief at 7 n.3. But it contends that, aside from these few extra microchannels, substantially all fins/microchannels on the heat spreader plate must receive cooling liquid to cool the heat spreader plate. *Id.*

This expert testimony shows that the parties agree that a POSITA would understand a "plurality of fins" to mean those fins that define the microchannels which are *designed to receive cooling liquid* to cool the heat spreader plate (in other words, that a "plurality of fins" need not include *all* fins on the heat spreader plate). There is no basis for importing the additional functional limitation sought by Asetek.

The Court adopts CoolIT's proposed construction and interprets this claim term under its plain and ordinary meaning.

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2. "direct the cooling liquid from the central region toward the perimeter of the lower chamber" ('601 patent, claims 1, 6, 12)

| Asetek's Construction | CoolIT's Construction | Court's Construction |
|---|---|---|
| "direct the cooling liquid from the central region through the lower chamber toward the perimeter of the lower chamber" | No construction is necessary. Defendants object to Asetek's proposal to construe this term, as it is already in asserted claim 1 of the '354 patent. Defendants reserve their right to assert the term "central region" as invalid under 35 U.S.C. § 112." | Plain and ordinary meaning |

The claim language provides as follows:

> "A cooling system for a computer system processing unit, comprising … an upper chamber and a lower chamber … wherein the lower chamber includes a plurality of channels configured to split the flow of cooling liquid and direct the cooling liquid from the central region toward the perimeter of the lower chamber [where the cooling liquid is collected along the perimeter and directed from the lower chamber through the second passage]"

'601 patent, claims 1, 6, and 12 (emphasis added; the bracketed language is only included in claims 1 and 12, *not* claim 6).

Asetek asks that the Court construe that above bolded phrase to mean fluid that flows ***through*** the lower chamber "from the central region toward the perimeter of the lower chamber." Asetek's Opening Brief at 8. Such a construction would exclude a flow path wherein the fluid exits the lower chamber, meanders through the entire cooling loop (including a remote radiator), and eventually returns to the lower chamber. *Id.*

Asetek's patented liquid cooling design has a **pump unit** that combines a pump, dual-chambered "reservoir," and a "heat exchanging interface" (*i.e.*, a cold plate) into a single component. *Id.* at 5. The reservoir is divided into two chambers known as the "upper chamber" and the "lower chamber" in the '601 patent claims. *Id.* The dual chambers are vertically spaced apart and fluidly coupled together to allow for heat dissipation from the computer processing unit

(the "CPU") via the heat exchanging interface. *Id.* at 5-6. Thus, the boundary wall of the lower chamber is placed in direct thermal contact with the CPU. *Id.* at 6. This configuration enables separate and independent optimization of the pumping function in the upper chamber and the heat transfer function in the lower chamber. *Id.*

Asetek argues that the '601 patent describes a very specific configuration for the dual-chambered reservoir wherein the cooling liquid enters the lower chamber from the upper chamber through a first passage that is substantially central to the lower chamber, as shown in the highlighted portion of Figure 9 of the specifications:

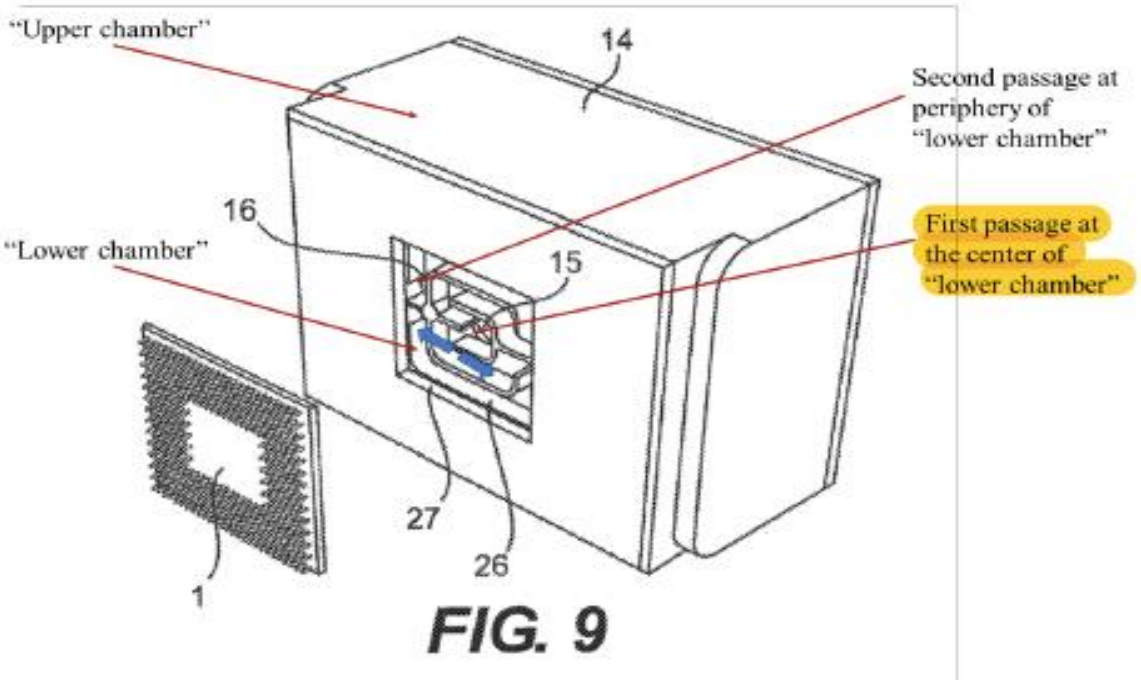


FIG. 9

*Id.* at 6-7 (highlight added).

Coolant entering the lower chamber splits and flows outwardly along a plurality of channels from the central region towards the perimeter of the lower chamber, where a second passage collects the heated coolant and directs it out of the lower chamber:

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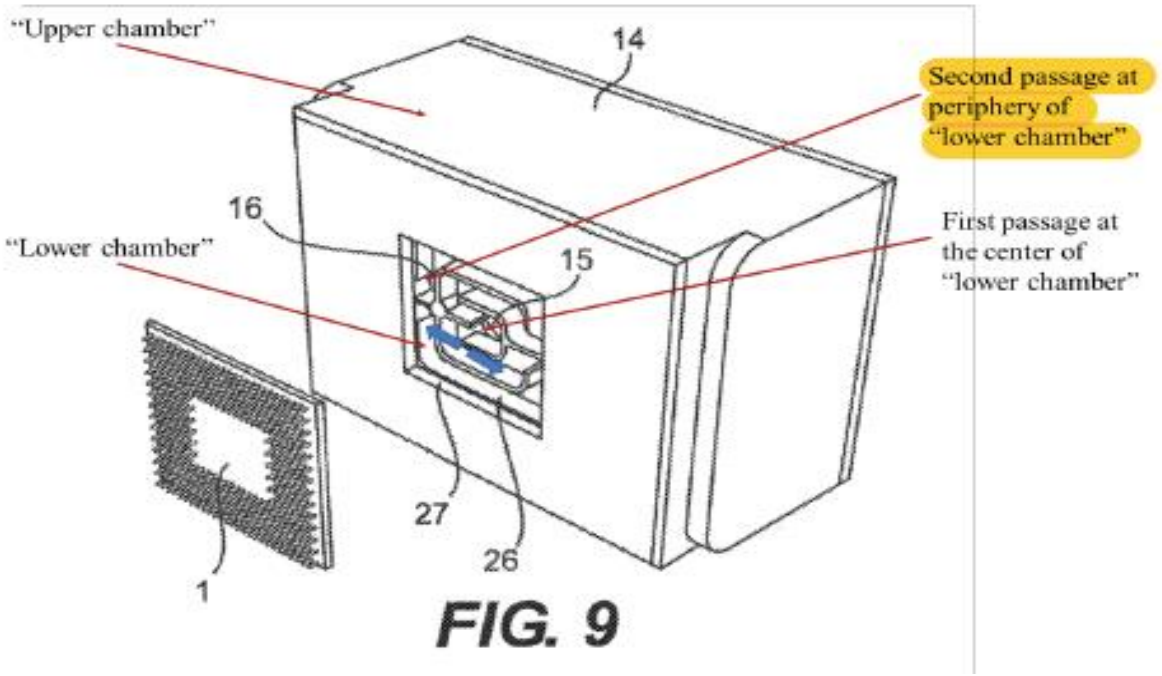


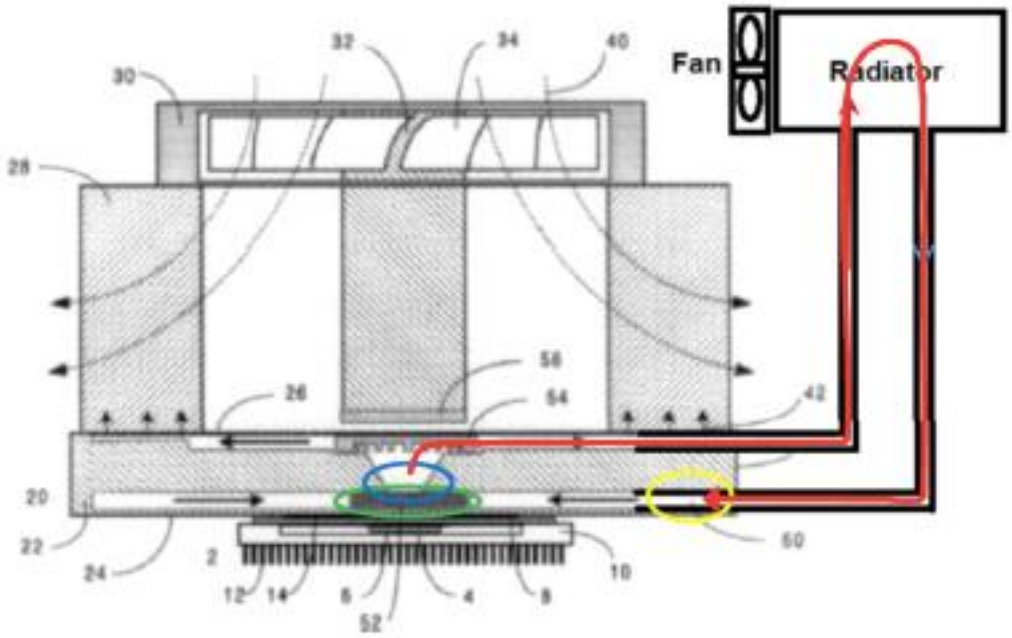

FIG. 9

*Id.* (highlight added). In its Opening Brief, Asetek dubs this configuration the "**center-to-perimeter**" flow in the lower chamber: the coolant flows *from* the centrally located first passage (where it contacts and cools the CPU chip, which generates the most heat) in an outward direction to the perimeter. *Id.* at 15.

Asetek contends that the center-to-perimeter flow contains functional benefits that are integral to the invention. *Id.* Positioning the first passage at the central region of the lower chamber allows the cooling liquid to make thermal contact with the heat exchanging interface *first*, before collecting any heat from the perimeter of the lower chamber. *Id.* This greatly increases heat-removal efficiency because the center of the heat-exchanging interface (*i.e.*, the center of the cold plate) is positioned right above the heat-generating CPU and is therefore **hotter compared to the peripheries**. *Id.* at 7. Thus, allowing the coolant to enter at the **center** of the lower chamber (as opposed to the periphery) ensures more efficient heat removal from the hottest region of the heat exchanging interface. *Id.*

In CoolIT's configuration, the cooling liquid *enters* the lower chamber at the *periphery* and *exits* at the *center*, which creates a **perimeter-to-center flow**. *Id.* at 14. CoolIT argues that, because the claim language does not require the cooling liquid to always stay within the lower

chamber, the liquid can travel from "a central region" to a "spaced apart" radiator before flowing "toward the perimeter of the lower chamber [50,]" as depicted below:




CoolIT's Responsive Brief at 8-9 (Docket No. 248). In the figure above, "the fin array (item 52 in the green circle) creates a plurality of channels that direct the cooling liquid to flow up from the blue circle, which is '[a] central region,' toward (and to eventually reach) the yellow circle, which is 'the perimeter of the lower chamber.'" *Id.*

The Court adopts the plain and ordinary meaning of the claim term. The plain and ordinary meaning excludes CoolIT's proposed construction. Under CoolIT's proposed construction, the cooling liquid *enters* the lower chamber at the *periphery* and *exits* at the *center*. This is a perimeter-to-center flow rather than a center-to-perimeter flow. In other words, under CoolIT's construction, the cooling liquid is not directed "*from* the central region *toward* the perimeter of the lower chamber." '601 patent, claims 1, 6, and 12 (19:12-13; 19:58-59; 20:48-49) (emphasis added). Instead, the cooling liquid is directed ***from the perimeter*** (*i.e.*, from a spaced apart radiator) ***toward the center*** of the lower chamber. This contravenes the plain language of the claim terms.

CoolIT contends that its configuration ultimately directs the fluid from the center to the periphery (*i.e.*, after exiting the lower chamber, and being routed through an external radiator). Responsive Brief at 7-9. However, that construction, under which the fluid is directed from the center region toward the perimeter of the lower chamber, would render meaningless the directional language of the claim. *Cf. Merck & Co. v. Teva Pharm. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) ("[a] claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so").

In sum, the Court adopts the plain and ordinary meaning of this claim term.

## IV. CONCLUSION

For the foregoing reasons, the Court construes the contested claim terms as follows:

- Term one (1): "first/second side of the [plurality of] fins" and "first/second side of the plurality of juxtaposed fins" has its plain and ordinary meaning without the need for further construction.
- Term two (2): "direct the cooling liquid from the central region toward the perimeter of the lower chamber" has its plain and ordinary meaning without the need for further construction.

The Court continues to encourage the parties to engage in productive settlement negotiations.

**IT IS SO ORDERED**.

Dated: July 8, 2021

EDWARD M. CHEN
United States District Judge

United States District Court
Northern District of California